



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,505	03/15/2004	Paul A. Bristow	3699	9495

22474 7590 04/29/2005

DOUGHERTY, CLEMENTS & HOFER
1901 ROXBOROUGH ROAD
SUITE300
CHARLOTTE, NC 28211

EXAMINER

DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
----------	--------------

1732

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/800,505

Applicant(s)

BRISTOW ET AL.

Examiner

Matthew J. Daniels

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 35-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. The Applicant argues that Fig. 11 of the priority document supports the claim to domestic priority for Claims 30-32. The applicant has cited the following portions of Fig. 11 in order to support the right to priority for Claims 30-32:

• Doghouses can be formed in Superlite or other material in a family tool and then cut apart before being bonded to the door panel

• Vibration welded features with clips or box nuts

The Applicant's claim to domestic priority for vibration welding in Claims 30-32 is deemed to be valid in view of the portion of the priority document cited. However, the Examiner still finds insufficient support in the priority document for particular types of cutting and additional types of welding, including ultrasonic welding, claimed in Claims 30-32. The portions of Claims 30-32 that pertain to vibration welding are accorded priority under 35 USC 119(e) to 3 April 2003. The filing date of all other portions of Claims 30-32 is the date of filing of the instant application. The Examiner also notes that the Applicant has not contested the Examiner's finding of insufficient evidence in the priority document for Claims 14, 17, and 23-32. The filing date of Claims 14, 17, and 23-32 is therefore deemed to be the filing date of the instant application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 1732

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 9, 21, and 22** are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a fabric, film, felt, fur, or leather, does not reasonably provide enablement for “a combination thereof.” The specification, as originally filed, does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The introduction of “a combination thereof” constitutes new matter in the application.

3. **Claims 30, 31, and 32** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding Claims 30, 31 and 32, the phrase “needed” renders the claims indefinite because the claim does not set forth under what conditions the steps are needed, and therefore it is unclear if the steps are performed. The language of “needed” requires a determination of necessity, but since no rationale for determining the necessity of the additional processes is presented, it remains unclear whether the limitations following the phrase “needed” are part of the claimed invention.

Art Unit: 1732

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 20, 23, 24, 30, 33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Breezer (USPN 5,635,129), Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), and Corpe (USPN 5,795,015). **As to Claim 1**, Holtrop teaches a thermoforming process for forming headliners (5:24) which comprises the steps of heating first and second layers (4:59-61), transferring the sheets to a vacuum thermoforming mold (4:62-63 and 5:3-5), and molding the sheets onto halves of the mold (5:3-5). Holtrop is silent to: a) an oven for heating the first and second sheets to predetermined temperatures, b) frames holding the first and second sheets, c) thermoforming the first and second sheets onto half molds prior to fusing regions of the headliner parts, d) the interior compartment having impact cushioning, e) ejecting the unified part, and f) trimming the unified part and g) finishing the unified part.

a) Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4).

b) Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities.

Art Unit: 1732

c) Breezer teaches a thermoform process to form thermoformed articles with portions of significantly greater thickness than the combined thicknesses of the sheets from which the article is formed (2:35-39) comprising the steps of: holding a first sheet along its edges (Fig. 6, Item 34); heating the first sheet (3:39-41); transferring and molding the first sheet onto a half mold of a vacuum thermoforming mold forming a first part (3:38-47); holding a second sheet along its edges (Fig. 6, Item 30); heating the second sheet (3:49); transferring and molding the second sheet onto an opposing half mold of the vacuum thermoforming mold forming a second part (3:48-50); compressing the half molds of the thermoforming mold fusing regions of the first part to the second part (3:50-54), thereby forming a unified part having at least one interior compartment (Fig. 6).

d) Timothy teaches a roof-mounted airbag. In view of the interior cavities of Timothy having head impact cushioning (2:1-18), interior cavities would have been obvious to one of ordinary skill in the art. The Examiner also takes the position that the thermoformed laminate taught by Holtrop would have inherently have had impact cushioning because it contains interior cavities (Fig. 2) as sought by Applicant.

e) Haardt teaches ejecting a composite laminate part (4:55-56).

f) Corpe teaches (6:44-49) trimming.

g) The applicant admits on Page 11 of the specification that finishing steps include modification of the interior compartment. Breezer teaches (Fig. 7) filling the compartment. Holtrop also teaches filling the compartment (5:15-21). Applicant does not teach a specific order for the steps comprising the thermoforming process and therefore finishing, as exemplified by Applicant, is prima facie obvious in view of Breezer and Holtrop.

The references of Holtrop, Byma, Steward, Breezer, Haardt, and Corpe are properly combinable because all are directed at thermoforming laminate sheets, and are therefore within the same field of endeavor. The references of Holtrop and Timothy are properly combinable because both are directed at headliners having cavities. One would have been motivated to combine the methods taught by Byma, Steward, Breezer, Haardt, Timothy, and Corpe with the twin-sheet thermoforming process taught by Holtrop in order to produce a headliner with improved acoustic properties as taught by Holtrop, optimal bonding of the laminate layers as taught by Byma, without shrinkage and surface irregularities as taught by Steward, with increased thickness as taught by Breezer, reduced danger to the laborer by ejecting the part rather than removing it manually as in the method of Haardt, improved head impact cushioning as in the method of Timothy, and improved aesthetics and functionality as in the method of Corpe. Therefore, it would have been prima facie obvious to one of ordinary skill at the time of the invention use the thermoform process taught by Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe as sought by Applicant in Claim 1. **As to Claim 20**, Holtrop teaches a unified headliner part (5:24). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention using the process of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe to use the product as a headliner. **As to Claim 23**, Holtrop teaches injecting foam into the interior compartment forming a unified part (5:15-21). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention. **As to Claim 24**, Holtrop teaches injecting foam, but is silent to injecting "insulation" or to the foam acting as insulation. The Examiner takes the position that it would have been obvious to one of ordinary

Art Unit: 1732

skill in the art that the foam taught by Holtrop (5:15-21) would have acted as thermal and sound insulation because foam is cellular, and the cells contained in foam would have inherently performed the function of insulating. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to inject insulation into the interior compartment forming a unified part because doing so would reduce noise within the passenger compartment. **As to Claim 30**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle. **As to Claim 33**, Holtrop teaches "preheating" the first sheet (4: 59-63), and additionally a preheating step for lamination of the thermoplastic sheet (4:16-24). Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4). Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the oven of Byma for obtaining optimal compression and bonding of the layers and the tenter frames taught by Steward to avoid surface irregularities and shrinkage with the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe to achieve the same benefits. **As to Claim 34**, Holtrop teaches preheating the second sheet (4: 59-63), and additionally a preheating step for lamination of the thermoplastic sheet (4:16-24). Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for

Art Unit: 1732

thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4). Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the oven of Byma for obtaining optimal compression and bonding of the layers and the tenter frames taught by Steward to avoid surface irregularities and shrinkage with the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe to achieve the same benefits.

5. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), and Corpe (USPN 5,795,015). Holtrop in view of Byma, Steward, Breezer, Haardt, Timothy, and Corpe teach the subject matter of Claim 1. The Examiner cites Page 3 of Applicant's specification to show that the "first headliner part...is substantially the shape that is visible as seen from inside the vehicle" to distinguish the first sheet of Claim 2 (visible inside vehicle) from the second sheet of Claim 3. Claims 2 and 3 have been amended to recite a particular flexural modulus of the composite. This limitation is not given patentable weight in determination of the method claimed because it is an article limitation. **As to Claim 2**, Holtrop is silent to the first sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers. Haardt teaches a first sheet (2:23) that is a low pressure (3:47), thermoformable, thermoplastic composite comprised of polypropylene and reinforcing agents (2:38). Haardt teaches both first and second sheets comprised of polypropylene and reinforcing agents (2:35-

Art Unit: 1732

39), and long glass fibers (2:59 to 3:6) used as reinforcing agent in the second sheet (3:3), and therefore it would have been obvious to one of ordinary skill that long glass fibers also be used as the reinforcement in the first sheet. Although Haardt is silent to the long glass fibers specifically being “chopped,” the Examiner takes the position that the long glass fibers are not indefinite in length, and were therefore cut to some length. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a first sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers given Haardt’s teaching that such a sheet has an increased rigidity in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe. **As to Claim 3,** Holtrop is silent to the second sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers. Haardt teaches a second sheet that is a thermoformable, thermoplastic composite comprised of polypropylene and long glass fibers (2:59 to 3:6). Although Haardt is silent to the second sheet that is a “low pressure composite has a flexural modulus of about 900 MPa to about 1800 MPa as determined by ASTM D792” Haardt’s teaching that both sheets are comprised of polyethylene and that the first sheet is formed at reduced pressure would make it obvious to one of ordinary skill that the second sheet is also capable of being formed at reduced pressure and is therefore, “low pressure composite” Although Haardt is silent to the long glass fibers specifically being “chopped,” the Examiner takes the position that the long glass fibers are not indefinite in length, and were therefore cut to some length. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a second sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers, given Haardt’s teaching

Art Unit: 1732

that such a sheet has an increased rigidity, in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe.

6. **Claims 4, 5, 6, 7, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), and Corpe (USPN 5,795,015). Holtrop in view of Byma, Steward, Breezer, Haardt, Timothy, and Corpe teach the subject matter of Claim 1. **As to Claim 4**, Holtrop teaches a first headliner part that is further comprised of a layer of fusing adhesive (3:59-61 and 4:16-20 and 4:33-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe because doing so would help prevent the problems of layer delamination and sagging headliners. **As to Claim 5**, Holtrop teaches a second headliner part that is further comprised of a layer of fusing adhesive (3:59-61 and 4:16-20 and 4:33-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe because doing so would help prevent the problems of layer delamination and sagging headliners. **As to Claim 6**, Holtrop teaches the first sheet vacuum molded on the half mold (5:3-5) wherein the layer of fusing adhesive is on a side of the first sheet that is not in contact with the half mold (4:34-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive on a side of the first sheet that is not in contact with the half mold in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe,

Art Unit: 1732

because doing so would aid in bonding the two sheets together and help prevent the problems of layer delamination and sagging headliners, and also avoid sticking of the sheet to the mold. As to **Claim 7**, Holtrop teaches the second sheet vacuum molded on the half mold (5:3-5) wherein the layer of fusing adhesive is on a side of the second sheet that is not in contact with the half mold (4:34-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive on a side of the second sheet that is not in contact with the half mold in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe because doing so would aid in bonding the two sheets together and help prevent the problems of layer delamination and sagging headliners, and also to prevent sticking of the sheet to the mold. As to **Claim 12**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce an adhesively laminated unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, and Corpe because doing so would have helped reduce the problems of layer delamination and sagging headliners.

7. **Claims 8-11, 13-16, 21, 25-27, 31 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), and Corpe (USPN 5,795,015) and further in view of Juriga (USPN 5,549,776). Holtrop in view of Byma, Steward, Breezer, Haardt, Timothy, and Corpe teach the subject matter of Claim 1. As to **Claim 8**, Holtrop teaches heating the first sheet, transferring a cover-stock material to the first

Art Unit: 1732

sheet, compressing with heat and pressure and fusing the cover-stock material to the first sheet forming a covered headliner part; and transferring the covered first headliner part to a second mold and positioning the covered first headliner part in the half mold of the vacuum thermoforming mold (4:1-5:32). Holtrop is silent to matched mold halves. However, the Examiner takes the position that in the method of Holtrop, the means for applying pressure (4:19), which inherently constitutes a mold, would have obviously also constituted matched mold halves in order to have the capability to apply pressure to both faces of the sheet simultaneously. However, in further support of the rejection, the Examiner cites Juriga, who teaches a thermoform process further comprising the steps of: after heating the first sheet in the oven to the predetermined temperature (3:19-20 and 6:25-27), transferring the heated first sheet to a thermoforming mold having matched mold halves (3:22 and Fig. 4, Items 142 and 144); transferring a cover-stock material to the thermoforming mold having matched mold halves (4:21-23); compressing and fusing the cover-stock material to the first sheet forming a covered first headliner part (6:29-33). The method of Juriga would have been obvious as the laminating step of Holtrop in order to impart non-planar shapes to the individual laminate sheets. It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to combine the method of Juriga with method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, and Corpe to provide a self supporting headliner having elastic pliability and impact resistance, and having structural integrity at elevated temperatures, as taught by Juriga (2:28-52) with improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 9**, Holtrop teaches a cloth (3:62) and a fabric (4:17) cover stock material, which the Examiner interprets to be the same as a felt. It would have been prima facie obvious to one of ordinary skill in the art at

Art Unit: 1732

the time of the invention to have used a fabric or cloth as taught by Holtrop in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe, and Juriga because doing so would have provided an improved aesthetic appeal and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 10**, Holtrop teaches a cover stock with an underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, and Corpe because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 11**, Holtrop further teaches an interlayer adhesive (3:59-63 and 4:16-24) to promote the adhesion of the fabric and foamed thermoplastic sheet. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to have used an interlayer adhesive to promote adhesion of the fabric and foamed thermoplastic sheet in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe, and Juriga because doing so would have helped prevent the problems of layer delamination and sagging headliners. **As to Claim 13**, Holtrop is silent to a layer of reinforcing scrim. Juriga teaches (2:55-60) an improved fiber reinforcing scrim which structurally reinforces the laminate and reduces sag at elevated temperatures located in the second sheet (5:6-7). Juriga teaches that the scrim layer is molded to the second sheet (6:29-35) in a thermoforming mold having matched mold halves (6:13-46) by compressing and fusing the reinforced scrim material to the second sheet forming a scrim reinforced second headliner part. Holtrop teaches transferring and positioning a second headliner part onto the opposing half mold of the vacuum thermoforming mold (4:51-68). It would have been obvious to one of ordinary skill in the art at the time of the

Art Unit: 1732

invention to mold a layer of scrim material to the second sheet forming a unified headliner part because doing so would structurally reinforce the laminate and reduce sag at elevated temperatures. **As to Claim 14**, Holtrop teaches an underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe, and Juriga because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 15**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe, and Juriga because doing so would have helped prevent the problems of layer delamination and sagging headliners. **As to Claim 16**, Holtrop teaches fusing the layer of fusing adhesive on the covered first headliner part to the layer of fusing adhesive on second headliner part, thereby forming a covered unified part (4:64-65). Holtrop teaches specifically mold blocks closing on to the portions of the laminate to be adhered (4:64-65). Compressing the half molds of the thermoforming mold to adhere the layers of fusing adhesive would have been prima facie obvious over the method of Holtrop. **As to Claim 21**, Holtrop teaches a finished headliner (5:22-28) covered with a fabric (4:16 and 4:59-69) and it would have therefore been prima facie obvious to one of ordinary skill in the art at the time of the invention because using the finished headliner covered with fabric of Holtrop would have improved aesthetic appeal. **As to Claim 25**, Holtrop teaches injecting foam

Art Unit: 1732

into the interior compartment after compressing the half molds (4:62-66 and 5:15-21), forming a covered unified part. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention because doing so would help reduce the severity of head injury to passengers. **As to Claim 26**, although Holtrop does not specifically teach injecting insulation, Holtrop does teach injecting foam (5:15-21) into the interior compartment after compressing the half molds (4:62-66 and 5:15-21), forming a covered unified part. The Examiner takes the position that it would have been obvious to one of ordinary skill in the art that the foam taught by Holtrop would have acted as thermal and sound insulation. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to inject insulation into the interior compartment because doing so would help reduce noise in the passenger compartment. **As to Claim 27**, Juriga teaches a reinforced scrim headliner part (6:13-48). Holtrop teaches injecting foam into the interior compartment of the unified part (4:51-68 and 5:15-21). Injecting foam into a unified part would have therefore been prima facie obvious to one of ordinary skill in the art at the time of the invention. **As to Claim 31**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle. **As to Claim 32**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle.

8. **Claims 17-19 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), Corpe (USPN 5,795,015), and Juriga (USPN 5,549,776). Holtrop in view of Byma, Steward, Breezer, Haardt, Timothy, and Corpe teach the subject matter of Claims 1 and 7. Holtrop in view of Byma, Steward, Breezer, Haardt, Timothy, Corpe, and Juriga teach the subject matter of Claims 8 and 13. **As to Claim 17**, Holtrop teaches an underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe and Juriga because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 18**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an intralayer adhesive in the process of Breezer, Byma, Holtrop, Steward, Haardt, Timothy, Corpe, and Juriga because doing so would have helped prevent the problems of layer delamination and sagging headliners. **As to Claim 19**, Holtrop teaches a covered unified part and adhesive between the layers (4:16-35), but is silent to a layer of reinforcing scrim. Juriga teaches (2:55-60) an improved fiber reinforcing scrim which structurally reinforces the laminate and reduces sag at elevated temperatures located in the second sheet (5:6-7). Juriga teaches that the scrim layer is molded to the second sheet

Art Unit: 1732

(6:29-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to mold a layer of scrim material to the second sheet forming a scrim reinforced headliner part because doing so would structurally reinforce the laminate and reduce sag at elevated temperatures. **As to Claim 22**, the Examiner interprets the reinforced scrim part of this claim to be the united first and second sheets, not the reinforced scrim second headliner part as claimed in Claim 19. Holtrop teaches that both surfaces of the headliner (4:53-54) are covered with a fabric, and are unified (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention that both surfaces of the headliner be covered with fabric to improve aesthetic appeal and acoustic dampening.

9. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byrna (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Timothy (USPN 5,775,726), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), and further in view of Strapazzini (USPN 5,529,742). Holtrop in view of Byrna, Steward, Breezer, Haardt, Timothy, and Corpe teach the subject matter of Claim 1. Holtrop in view of Byrna, Steward, Breezer, Haardt, Timothy, Corpe, and Juriga teach the subject matter of Claim 8. Juriga teaches, prior to compressing the half molds of the thermoforming mold fusing the covered first and second headliner parts, (6:15-19, foamable lamina in particular) positioning acoustic enhancing materials into what will become the interior compartment. Strapazzini teaches a vacuum forming (4:28) method for forming plastic molded panels with inserts wherein objects such as wires and duct work (2:14) are molded within the thin plastic sheet blanks. Holtrop teaches covered unified parts (4:1-68). Strapazzini also teaches integral portions

Art Unit: 1732

configured to receive or mount exterior mechanical parts or trim elements (2:15-18). The Examiner interprets these to be fasteners. The references are properly combinable because all are directed to thermoforming laminates or headliners, and are therefore within the same field of endeavor. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the elements taught by Strapazzini in the method of Holtrop, Byma, Steward, Breezer, Haardt, Timothy, Corpe, and Juriga in order to provide acoustic improvements and to hide items such as wiring and fasteners from view and thereby provide a more pleasing appearance to the headliner.

Response to Arguments

Rejections under 35 USC 112

The rejections of Claims 1-3, 9, 21, 22, and 28 under 35 USC 112, second paragraph is withdrawn in view of Applicant's amendments. It should be noted that support for the amendments to Claims 2 and 3 originates in the Applicant's specification on page 12, lines 8-9, rather than page 14, lines 8-9, as cited by Applicant. The Applicant's arguments in response to Claims 30-32 have been considered, but are not persuasive. "Need" requires determination of necessity, and because all of the processes listed in the claim could be optionally performed even when they are not necessary, it is still unclear whether the claimed steps are being performed.

Rejections under 35 USC 103(a)

Applicant's arguments filed 9 February 2005 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

Art Unit: 1732

Claim 1: In contrast to Holtrop, Applicant's process does not teach first forming a laminate and then using air pressure to expand the laminate. In contrast to Byma, Applicant's step of compression molding only occurs after vacuum thermoforming. Steward does not teach tenter frames as a conveyor of product to the mold. Breezer does not teach forming a cavity except as a means of adding reinforcing thermoplastic material, a headliner, or twin sheets with a cavity within, or tenters for conveying sheets. The Official Notice of known interior cavities was traversed and challenged as not being relevant to "head" impact cushioning. Applicants' process does not claim an ejector but a process of ejecting. Corpe does not teach trimming the Applicant's type part having at least one interior component.

Claim 20: Not separately argued.

Claim 23: Applicants claim compressing, fusing to form a unified part, then injecting foam, in contrast to the process of Holtrop.

Claim 24: Applicant's process forms a unified part, then injecting insulation. In Holtrop's invention, the laminate is formed first and then expanded.

Claim 30: Corpe does not teach finishing the Applicant's type part.

Claims 33 and 34: Applicant's process teaches a two-step process of heating a first sheet, having an additional preheating step in Claims 33 and 34. Neither of the cited references teach the benefits of a two-step process.

Claims 2 and 3: Claims 2 and 3 are specific examples of composites that are suitable for head impact cushioning. None of the cited prior art teaches a unified part that has at least one interior component with head cushioning impact.

Claims 4-7: Not separately argued.

Art Unit: 1732

Claims 8, 25, 26, and 31: Juriga's patent does not appear to teach what is claimed, particularly cover stock and first sheet being compression molded and then transferred to a vacuum mold.

Holtrop does not teach the Applicant's process of compressing then injecting. Holtrop does not teach the use of insulation. Corpe does not teach most of the claimed processes.

Claims 9 and 11: The claims are not anticipated by Holtrop because the prior art references do not refer to either a film or fur or a combination of a fabric, a felt, a fur, or a leather. Applicant does not claim a foam as in the method of Holtrop.

Claims 10, 12, and 21: Applicant's process produces at least one cavity having head impact cushioning, a layer of foam for sound dampening, a cover stock for aesthetic qualities, and additional sound dampening, where the process is not limited to forming closed interior cavities, as in an expansion process. Holtrop also does not teach a layer of foam with a cover stock and a thermoplastic composite, made by vacuum thermoforming. Holtrop does not teach the flexural modulus claimed in Claim 2, vacuum thermoforming in combination with compression molding, and the Examiner's analysis does not match the stated purpose of the hollow cavities. Holtrop's invention does not teach the unified covered part comprised of a cover stock material on a reinforced thermoplastic composite being a fabric, a film, or a felt, or a fur, or a leather, or a combination thereof. Applicant's process is multi-step and can be run in parallel, and Holtrop's process does not teach a similar property of a cavity having head impact cushioning.

Claims 13: There is no teaching by Juriga to form a cavity. The reinforcement on both sides of each sheet will prevent sheets from deflecting, and would make the combination of Juriga and Holtrop inoperative.

Claims 27 and 32: Not separately argued.

Art Unit: 1732

Claims 14-16: Only applicant's process teaches a cover stock inclusive of an underlying layer of foam. Juriga's and Applicant's inventions are distinctly different in that Juriga has a center layer of foam, Applicant has none. Juriga has a single laminate, Applicant has two laminates.

Claims 17-19 and 22: Not separately argued.

Claim 28: Applicant claims injecting insulation after compressing the half molds, which is not taught by Holtrop. Holtrop forms a laminate that is partially fused, and then expands to form the cavities. Holtrop cannot add insulation or foam until after expansion.

Claim 29: The Applicant's method is different from that of Strapazzini because Strapazzini does not teach twin sheet thermoforming, and thus is only marginally relevant. Strapazzini does not teach forming a cavity with a second part.

These arguments are not persuasive for the following reasons:

Claim 1: The Examiner respectfully disagrees with the Applicant's assessment of Holtrop, Byma, Breezer, Haardt, and Corpe. Holtrop teaches two layers, each individually laminated, supplied to the mold, not a single laminate, as suggested by the Applicant. This is substantially shown by Holtrop's teaching of "portions of the laminate to be adhered" (emphasis added) in 4:65. This shows that Holtrop's invention, as that of Applicant, is comprised of two distinct layers until the stage of compression. Breezer was relied upon to show that it would have been obvious to mold the sheets individually, then compress the halves, in the alternative to the order indicated by Holtrop. Breezer was relied upon to show that those aspects of the Applicant's invention to which Holtrop was silent were already well known in the art. Byma was not relied upon to show a particular order of steps, but only that it was known to optimize temperatures for

Art Unit: 1732

thermoforming. Steward was relied upon to show the use of tenter frames in a thermoforming operation. In view of Breezer's teaching of clamping, transferring and molding while holding the sheets (3:39-54), use of a tenter frame to perform these steps, including transferring, would have been obvious over Steward and Breezer. Breezer teaches forming a cavity, as does Applicant. The intended use of the cavity of Breezer does not separate the method of Breezer as being from a different field of endeavor than the other references cited because all pertain to thermoforming or making of headliners. The Examiner has reconsidered the Applicant's traversal of Official Notice of cavities for impact cushioning. The Examiner further presents the method of Timothy for teaching an apparatus for protection against head impact cushioning. While the method of Holtrop was already shown to have cavities that would have inherently performed this purpose, the Examiner cites the method of Timothy for teaching that the head impact cushioning of cavities was well-known in the art, and cavities in headliners were already known for this purpose. The process of ejecting would inherently be performed with an ejector, as taught by Haardt. The Applicant has not specified any particular means or method of ejecting, only that the part is ejected. Corpe need not teach trimming of the Applicant's type part having an interior component in order to render the Applicant's claim to trimming and finishing prima facie obvious. Corpe was relied upon only to show that it was known obvious to one of ordinary skill in the art at the time of the invention to perform these operations on headliners, and thus, would have been obvious to one of ordinary skill in fabricating other headliners. The rejection of Claim 1 is respectfully maintained.

Claim 20: Not separately argued.

Art Unit: 1732

Claim 23: The method of Claim 1 was already addressed above. Holtrop further teaches injecting “into hollow volumes between expanded portions of sheets.” (5:15-21, as cited in previous action) As expansion obviously preceded injection of foam, this aspect of Applicant’s invention would not have been non-obvious over the combined method cited in the rejection of Claim 1.

Claim 24: The method of Claim 1 was already addressed above. Holtrop does teach a “unified” part, then injecting insulation because bonding must have necessarily preceded injection (5:15-21, as cited in previous action).

Claim 30: Corpe was not relied upon for finishing of Applicant’s part, but only to show that finishing of headliners was known. Finishing would still have been obvious over the combined method.

Claims 33 and 34: Holtrop clearly teaches the sheets being “preheated.” (4:62) However, in the alternative that Applicant is claiming an additional step of preheating, one need look no further than Holtrop for teaching of an additional “preheating” step, used in the lamination and fabrication of the individual sheets that comprise the headliner (4:16-24)

Claims 2 and 3: The Applicant’s amendment introduces specific properties of the composite into a method claim. While method claims may recite article limitations, they are only given patentable weight to the degree that they affect the method claimed. A particular flexure modulus does not distinguish the method from the prior art, particularly when composites comprising similar laminates are known.

Claims 4-7: Not separately argued.

Art Unit: 1732

Claims 8, 25, 26, and 31: Juriga appears to teach exactly that which Applicant claims, namely thermoforming the cover stock to the first sheet using matched mold halves. In further consideration of the Applicant's arguments, the Examiner also cites Holtrop (3:59-4:24) for teaching that Holtrop also teaches thermoforming the cover stock to the first sheet separately before providing the sheet to the vacuum thermoforming tool (4:51-68). Because Holtrop teaches forming under "heat and pressure" (4:19) forming surfaces used to apply pressure to the sheets of Holtrop would have inherently formed a first mold. The thermoforming apparatus of Holtrop constitutes the second mold in the combined method. Juriga was relied upon to show that thermoforming using matched mold halves to form a laminate was well known. It would have been obvious to substitute Juriga's method for the laminating step of Holtrop in order to impart other contours to the sheet prior to placing the sheet in the mold of Holtrop for further vacuum thermoforming. Holtrop teaches compressing then injecting foam (5:15-17), which would have rendered Applicant's claimed process *prima facie* obvious. As to insulation, Holtrop's foam would have inherently provided acoustical insulation, and the gas pockets within the foam would have also provided thermal insulation. The Applicant has not provided any evidence to the contrary that Holtrop's invention would inherently have performed these functions. Additionally, these may be considered to be article limitations. As to the Applicant's arguments directed to Corpe, the Examiner takes the position that Corpe's teaching of water jet cutting still renders the Applicant's process *prima facie* obvious.

Claims 9 and 11: The Applicant is reminded that the Applicant's claim is directed to a process, which is defined by stepwise process limitations. The Examiner takes the position that these are article limitations, and are not given patentable weight in examination of the process. Holtrop's

Art Unit: 1732

teaching of cloth or fabric still appears to render the claims prima facie obvious. As to the foam, the Applicant's broad claim wording of "comprised" renders this claim prima facie obvious because other layers may be present in the prior art in addition to those claimed while still reading on the instant claim.

Claims 10, 12, and 21: The Applicant appears to be arguing the rejection by comparing the method of Holtrop to that claimed. Had the method of Holtrop anticipated the Applicant's in every way, the rejection would not have been made under 35 USC 103(a). However, those aspects not taught by Holtrop would have still been obvious to one of ordinary skill over the combined method cited in the rejection of Claim 1. Holtrop teaches cavities, a cover stock, and vacuum forming in combination with compression molding. Adhesively laminating was already well known in the method of Holtrop (3:59-4:50)

Claims 13: Because Holtrop teaches vacuum thermoforming of a laminate, there is no teaching or suggestion in the prior art as to why the combination of Holtrop and Juriga (and others, as cited in the rejection of Claim 13), would be inoperative. If one laminate can be vacuum thermoformed, one would have found it obvious to vacuum thermoform multiple laminates, or reinforced laminates. The Applicant has not provided any evidence that such a combination would be inoperative. As evidence that reinforcement would not have inhibited thermoformability, the Examiner also cites the prior art of record (Improved materials Promise new opportunities for GMT, van Damme, et al, first paragraph) for teaching that it was known to compression and vacuum form laminates comprising glass mats:

The European market for glass mat reinforced thermoplastics (GMT) is expected to show an average annual growth rate (AAGR) of 15% over the period 1997-2002. The GMT materials consist mainly of polypropylene and needled glass mats with either continuous or long (25-50 mm) glass strands, and most recently long chopped glass fibre mats, using typically 12 mm single fibres, made by means of the papermaking process. The glass mats are laminated on large continuous double steel belt presses with the thermoplastic materials to make laminates for either compression moulding, low pressure forming or vacuum forming.

This evidence in the prior art of record appears to contradict Applicant's argument as to the non-operability of the combination of Juriga and Holtrop by vacuum forming reinforced sheets.

Claims 27 and 32: Not separately argued.

Claims 14-16: Again, the Applicant's attention is directed to the claimed method. The Applicant's claim language of "comprising" does not exclude other layers. In addition, Holtrop teaches a layer of foam, as cited in the previous action. The Applicant does not appear to address the rejection over Holtrop's teaching. The Examiner maintains that it still would have been obvious to use the method of Juriga to form each of the laminate layers of Holtrop.

Claims 17-19 and 22: Not separately argued.

Claim 28: While the Applicant's traversal of Holtrop is noted, expanding prior to bonding was taught by Breezer, and still appears to render the Applicant's claim prima facie obvious in the combined method.

Claim 29: The Applicant's traversal of the method of Strapazzini is noted. However, Strapazzini was not relied upon to show the entire method, but only that the limitations claimed

Art Unit: 1732

by the Applicant are not new in the art, and that it would have been prima facie obvious to combine the method of Strapazzini with that of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice for the benefits cited in the previous Office Action. The Applicant further admits that the method of Strapazzini has relevance, if only marginally.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Examiner cites the following for indication of the state of the art at the time of the invention: Welch (USPN 6042141), Learman (USPN 6062635), Namura (USPN 5952089), Kim (USPN 6007898), Nicholas (USPN 6423933), Romesberg (USPN 5486256).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 5:30 pm.

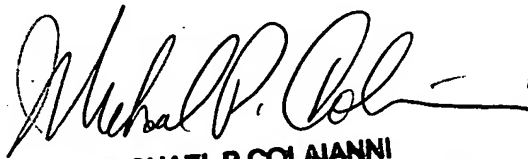
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1732

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJD 4/19/50

MJD


MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER